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ACUTE MYOCARDIAL INFARCTION CLINICAL DATA REGISTRY: AN EFFORT TO PROMOTE CLINICAL FEEDBACK AND QUALITY IMPROVEMENT FOR ACUTE MYOCARDIAL INFARCTION

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ABSTRACT

Objective: To evaluate the clinical characteristics and in hospital outcomes of the patients with acute myocardial infarction in tertiary care cardiac hospital.

Study Design: Descriptive cross-sectional study.

Place and Duration of Study: Adult Cardiology Department of Armed Forces Institute of Cardiology & National Institute of Heart Diseases, from 1st January 2015 till 31st August, 2015.

Material and Methods: All the patients presenting with acute myocardial infarction during the study period were included. Acute myocardial infarction registry by R & D Department was used as a data collection tool.

Results: Total 829 patients presented with acute myocardial infarction during our study duration. Males were 704(84.9%) while females were 125 (15.1%). Mean age of the patients was found to be 61.56 ± 2.19 years. Acute myocardial infarction was most prevalent in the age group 58-75 years. The most common symptom with which patients presented was angina 682 (82.1%).Patients with ST segment elevated MI (STEMI) were 702 (84.6%) while anterior wall myocardial infarction was the most common STEMI site 456 (64.8%). Injection Streptokinase was given to 255 (30.7%) patients with mean door to needle time 20 ± 2.1 minutes. Primary percutaneous intervention (PCI) was performed to the 447 (55%) of the patients, with mean door to balloon time 55 ± 1.5 minutes.

Conclusion: Acute myocardial infarction (MI) remains a leading cause of morbidity and mortality. Early management of MI can increase the life expectancy and quality of life of the patients.

Keywords: Myocardial infarction, Primary percutaneous intervention, ST segment elevated MI.

INTRODUCTION

Ischemic heart disease is the number one cause of death in the Western world as well as developing world and constitutes an immense public health problem[1,2]. The burden of ischemic heart disease is increasing in parallel with the increase in life expectancy[3,4]. As more persons live with heart diseases, the burden of prevalent diseases with its associated co-morbid complications is increasing. Identifying persons with heart diseases, measuring the incidence of disease and its outcome becomes essential as multifaceted approaches to reduce the burden of disease. In this context, myocardial infarction occupies a central role in the assessment of the burden of heart diseases[4,5]. Acute myocardial infarction (MI) remains a leading cause of morbidity and mortality worldwide[3]. Myocardial infarction occurs when diminished blood supply to the heart, exceeds a critical threshold and overwhelms myocardial cellular repair mechanisms designed to maintain normal operating function and homeostasis[4]. Ischemia at this critical threshold level for an extended period results in irreversible myocardial cell damage or death[2,5].

Approximately 1.5 million cases of myocardial infarction occur annually in the United States[5]. Myocardial infarction is a key component of the burden of cardiovascular diseases[4]. The assessment of the incidence and case fatality of myocardial infarction are important determinants of the decline in coronary disease mortality[6].

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MATERIAL AND METHODS

Data was collected through myocardial

infarction clinical registry by Research & Development Department of AFIC & NIHD. Data was collected from 1st January till 31st August, 2015. All the patients presenting with acute myocardial infarction during the study duration were included in the study.

Clinical registry was used to collect the data of the patients with acute myocardial infarction. Registry was specifically designed to measure the demographics of the patients, clinical signs and symptoms, risk factors, lab

Table: Demographics, clinical presentations, procedure details and post-procedure complications of patients presented with myocadial infarction.

S. No	Variables	Frequency (n)	Percentage(%)
Demographics			
1	Gender:		
	• Male	704	84.9%
	• Female	125	15.1%
2	Ethnicity:		
	• Punjabi	703	84.6%
	• Others	47	5.6%
	• Pashtun	41	4.9%
	• Kashmiri	37	4.5%
	• Sindhi	1	0.1%
3	Age (Mean±SD)	61.56 ± 2.19 years	
4	Age Groups:		
	• <20 years	0	0%
	• 21-38 years	14	1.7%
	• 39-57 years	148	17.8%
	• 58-75 years	600	72.4%
	• ≥ 75 years	67	8.1%
Clinical Presentations			
5	Risk Factors:		
	• Hypertension	185	22.3%
	• Diabetes Millitus	125	15.1%
	• Smoking	80	9.6%
	• Family History	75	9.0%
6	Symptoms:		
	• Angina	682	82.1%
	• Shortness of Breath	116	14.0%
	• Syncope	152	18.4%
7	Heart Failure Classes:		
	• KILLIP Class I	689	83.2%
	• KILLIP Class II	60	7.2%
	• KILLIP Class III	51	6.2%
	• KILLIP IV	28	3.4%
8	Lab Investigations:		
	• ECG Changes	802	96.7%
	• Elevated Cardiac Biomarkers (CK & CKMB)	497	60.0%
	• Deranged Lipid Profile	157	18.9%
	• Deranged Renal Functional Tests	118	14.3%
	• Impaired Glucose Levels	127	15.4%
		100	12.0%
9	Type of Myocardial Infarction:		
	• STEMI (ST-Segment Elevated MI)	702	84.6%
	• NSTEMI (Non-ST Segment Elevated MI)	127	15.3%
10	Sites of STEMI:		
	• Anterior	456	64.8%
	• Inferior	203	29.0%
	• Lateral	26	3.7%
	• Posterior	17	2.5%
Procedure Details			
11	Streptokinase Given	255	30.7%
12	Primary PCI	447	55.0%
13	Door to Needle time for Streptokinase (Mean ±S.D)	20 ± 2.1 minutes	
14	Door to Balloon time for Primary PCI (Mean ±S.D)	53 ± 1.5 minutes	
15	Mortality	105	12.7%
	i. Not willing for Primary PCI	40	4.8%
	ii. Late for injection Streptokinase	10	1.2%
	iii. STEMI		
	▪ Streptokinase Given	18	2.1%
	▪ Primary PCI	24	2.8%
	iv. NSTEMI	13	1.6%
Post-Procedure Complications			
16	• Stent thrombosis	11	1.3%
17	• Cardiogenic Shock	9	1.1%
18	• CVA	26	5%

investigations, site and type of myocardial infarction, procedural details and post procedure complications. Formal approval was taken from Institutional Ethical review board AFIC & NIHD.

Data was analyzed using SPSS-21 version. Quantitative variables were described with their mean ± S.D while qualitative variables were described with their frequency and valid percentages.

RESULTS

There were total 829 patients presented with acute myocardial infarction during our study duration i.e. January 2015 till August 2015. Out of which males were more in number 704(84.9%) as compared to females 125(15.1%). Most of the patients were of Punjabi ethnicity 703(84.6%). Mean age of the patients was found to be 61.56 ± 2.19 years. Acute myocardial infarction was most prevalent in the age group 58-75 years 600(72.4%), followed by 148(17.8%) in the age group 39-57 and 67(8.1%) in the age group ≥ 75 years. The most common symptom with which patients presented was angina 682 (82.1%) then syncope 152(18.4%) and shortness of breath 116(14%).

KILLIP Class I (no heart failure) was found in 689(83.2%) patients, KILLIP II in 60(7.2%), KILLIP III in 51(6.2%) and KILLIP IV was found in 28(3.4%) of acute myocardial infarction patients.

96% patients had ECGs changes while 497 (60%) patients had elevated cardiac enzymes (CK & CKMB). 18.9% patients had deranged lipid profile, 15.4% patients had impaired glucose levels while 4.1% patients had deranged renal functional tests. Patients with ST segment elevated MI (STEMI) were 702(84.6%) while Non-ST segment elevated MI were 127(15.3%). Anterior wall myocardial infarction was the most common STEMI site 456(64.8%).

Procedural details showed that Injection Streptokinase was given to 255(30.7%) patients with mean door to needle time 20 ± 2.1 minutes. Injection streptokinase was given to those STEMI patients who were not willing for Primary PCI. Primary percutaneous coronary intervention (PCI) was performed to the 447(55%) of the patients, with mean door to balloon time 55 ± 1.5 minutes. Primary percutaneous intervention was performed to the patients who were late for injection streptokinase. Mortality in the hospital due myocardial infarction or its complications was 12.7%.

DISCUSSION

Myocardial infarction is the leading cause of death throughout the world[7]. Approximately 450, 000 people in the United States die from coronary diseases per year[6]. The survival rate for U.S. patients hospitalized with MI is approximately 95%[8].

The incidence of MI increases with age; however, the actual incidence is dependent on predisposing risk factors for atherosclerosis[7]. Our study has helped us in understanding various factors associated with acute myocardial infarction in our local population. The mean age in our study subjects was 61.56 ± 2.1 years. This result was in accordance with the results of different studies conducted all around the world[8-10]. Approximately 50% of all myocardial infarctions in the United States occur in people younger than 65 years[5]. In our study population the most prevalent age group for MI was 58-75 years. However, in the future, as demographics shift and the mean age of the population increases, a larger percentage of patients presenting with MI would be older than 65 years[7].

Cardiovascular risk factors play a pivotal role in the occurrence of myocardial infarction[8]. Our study results exhibited that smoking history, hypertension and diabetes were major risk factors for MI which is concordant with the previous published data from the developing countries[9].

The common sites of ST-segment elevated myocardial infarction in our study were anterior wall MI 392(64.8%) and inferior wall MI 175 (29%).This is in agreement with the documented data from both the developed and third world countries[10-12]. Majority of the patients had KIILIP class-I of MI 689 (83.2%) followed by KILLIP class-II 60 (7.2%). This

result was especially in accordance with our neighboring countries[9,13].

The interesting finding of our study was the procedural details which showed the best quality of health care and patient management at AFIC & NIHD. Injection streptokinase was given to 255 (30.7%) patients with mean door to needle time 20 ± 2.1 minutes while Primary percutaneous intervention (PCI) was performed to the 447(55%) patients of MI. Overall mortality in the hospital due to myocardial infarction or its complications was 12.7%.

CONCLUSION

Acute myocardial infarction (MI) remains a leading cause of morbidity and mortality worldwide. Early management of MI can increase the life expectancy and quality of life of the patients.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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